

PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

A Latching Means for Cupboard Doors, Locker Doors, Drawers and like Openable Members

We, TRANSITORIA TRADING COMPANY AB, a Swedish Company of 15, Gjörwellsgatan, Stockholm, Sweden, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention relates to a latching means for cupboard doors, locker doors, drawers and like openable members.

The latching means according to the invention comprises a casing mountable on a face of the member and a resilient latching tongue extending substantially parallel with said face of the member, when the latter is open, said latching tongue being mounted at one end in the casing and having its other outer end portion extending out of the casing and movable in a direction toward and away from said face of the member, the latching means also comprising at a distance from said outer end portion of the latching tongue a stop for limiting said movement of the latching tongue, latching being effected by sliding engagement between the outer end of the latching tongue and a surface on a stationary structure with which the member co-operates, whereby when said member is closed with respect to said stationary structure, the latching tongue is bent resiliently, said latching action being effective by the tension in the latching tongue and said outer end of the latching tongue being retained in a catch-like manner in contact with the surface by friction or by small projections or recesses provided on the surface.

The inner end of the latching tongue is advantageously clamped in the casing. Alternatively the latching tongue may be integral at its inner end with the casing, e.g., the casing and the latching tongue being manufactured in one piece by injection moulding in a synthetic plastics, such as polypropylene, or a similar material.

According to one embodiment, the latching means can be mounted on a door, drawer or like member made of wood, the casing comprising fastening members in the form of fastening tongues or the like which together with the casing form a substantially U-shaped portion, so that the latching means can be mounted on the edge of the wooden member by depressing the fastening tongues into holes preferably pre-formed in the member, the fastening tongues and the holes respectively for said tongues preferably being parallel with the direction of the grain of the wood.

The latching means according to the invention offers advantages particularly from a cost point of view. The latching means itself is not expensive, and in addition thereto the mounting of the latching means is simplified to a substantial degree, because no fastening screws are needed and, in certain cases, no retaining plate is required on the portion opposite to the door, drawer or like member.

For achieving a latching means for doors, drawers or like openable members, which children can open only with difficulty, the means can be provided with a preferably U-shaped handle attached to the outside of the member, one end of said handle being connected to the member and the other end being connected to the outer end of connecting means extending through the member and the rear end of the casing, the inner end of said connecting means engaging the latching tongue. The connecting means is guided in such a manner, preferably in a hole in the rear end of the casing, that the inner end of the connecting means can move only in the direction toward and away from the casing, so that the door can be opened only when the handle end adjacent the connecting means is pressed against the member, whereby the latching tongue tilts over from one position to another position.

[Price 4s. 6d.]

The accompanying drawings show by way of example two embodiments of the invention.

5 Figure 1 shows the latching means in section along the line I—I in Figure 3, the latching means being mounted on a cupboard door and the door being shown opened,

10 Figure 2 shows the latching means in a similar way as in Figure 1, the door being shown closed,

Figure 3 shows the latching means seen from the inside of the door,

Figure 4 shows the latching means removed and seen from the opposite side,

15 Figure 5 shows a latching means difficult to open for children.

For reasons of greater clearness, the latching means shown is made without a retaining plate or the like.

20 In the Figures the cupboard door is designated by 1 and the door-frame by 2. The casing of the latching means comprises two side walls 3, a rear wall 4 and an upper portion 5, which together form the aforesaid casing enclosing the leaf spring latching tongue 6. The latching tongue 6 constitutes the latching member and is connected with the rear wall 4 of the casing. Due to its resilience, the said tongue can perform swinging motions which in the direction away from the door are limited by the upper portion 5 and its front edge 7 and in the direction to the door by a stop 8 integral with the casing, said stop being inclined inwardly from the front edge of the casing in order to render possible resilient motion of the outer end portion of the latching tongue 6. The casing is integral with a plate 9 extending perpendicularly to the casing. The plate 9 is also integral with the side walls 3 of the casing. The portion of the plate 9 adjacent the side walls 3 and located between said walls is inclined inwardly from the front edge of the casing to form the stop 8.

45 Extending from its upper edge and facing away from the casing the plate 9 is provided with two rearwardly directed fastening tongues 10 which together with the casing form a substantially U-shaped portion. The latching means is secured on the door by pressing the fastening tongues 10 into holes formed in the door by a tool. The forming of said holes is facilitated in that they usually extend in parallel with the direction of the wood grain. In the closed position of the door, the latching means is enclosed between the door and the door-frame and cannot fall off, for example, as a result of heavy vibrations which can arise during the transport of ready-mounted doors from the factory to the building site.

60 The latching means according to Figures 1—4 operates as follows: upon closing the door from the position shown in Figure 1 to the position shown in Figure 2, the latching

tongue 6 is first pressed against the stop 8 by the corner of the door-frame 2 which is adjacent the latching means. Thereafter the outer end portion of the latching tongue is bent over the stop 8 and at the same time 70 the surface 11 of the door-frame tends to compress the latching tongue 6 in the longitudinal direction whereby the latching tongue by resilience assumes an S-shape. To the latching tongue 6 is thereby imparted a 75 strong spring force in its longitudinal direction, which causes the outer end portion of the latching tongue to be kept in engagement with the surface 11 of the door-frame with a strong frictional force, so that the door is kept closed. Upon trying to open the door by pulling on the door, the end portion of the latching tongue 6 at first remains in its engaging position with the surface 11 of the door-frame and the opening movement cannot occur until the latching tongue 6 is compressed additionally in the longitudinal direction. The resulting increase of the spring force of the latching tongue 6 further contributes to maintaining the door in closed position. Upon completing the opening movement, the latching tongue is moved by snap action in the direction away from the door, so that the latching tongue abuts against the edge 7 of the frame. 95

The afore-described latching means can be applied without difficulty also to drawers.

In a preferred embodiment the end portion of the latching tongue 6 which is operative during the latching operation is bevelled with sharp corners. In certain cases, however, this end portion of the latching tongue 6 is rounded or given a bead-shape. Also it may be provided with a freely rotating roll, whereby the sliding movement of the latching tongue against the surface 11 of the door-frame is replaced by a rolling movement. 105

The latching tongue 6 which is designed as a leaf spring, is made of thin flexible steel sheet metal. In a preferred embodiment, however, both the latching tongue 6 and the surrounding casing, as well as the plate 9 with the stop 8 and the fastening tongues 10, are made of plastics, for example, polypropylene, which parts can be manufactured in one piece, preferably by injection moulding. 115

The latching means may be provided with a retaining plate or the like secured on the opposite part, for example on the door-frame, which retaining plate has retaining means for the latching tongue, for example in the form of projections or recesses. In another preferred embodiment, the latching tongue acts directly against the surface of the opposite part, for example a door-frame. If said opposite part is made of wood, the grain therein provides in many cases an arrangement of minor depressions which improves the latching effect. 125

In certain cases it is possible to omit the 130

portion of the intermediate plate 9 which forms the stop 8. In that case the latching tongue 6 upon its inwardly swinging motion stops directly against the support on which the latching means is mounted, for example a door, drawer or the like.

The construction renders possible a substantial simplification of the latching means, because the latter comprises a single part, manufactured for example of injection moulded plastics, and also because the latching means is mounted on a door, a drawer or a like member without the use of screws or like fixing means. The casing of the latching means may be provided with projections or a shoulder for fixing it to the support member, thereby rendering it possible to fix the casing by glueing or the like. The projections may also be provided with barbs engageable with the support member, for example a door or a drawer, in which case the projections are shaped like pins or fastening tongues by which the latching means can be mounted adjacent the edge of a door, a drawer or like member by pressing the pins or fastening tongues with a tool into holes preferably pre-formed in the support member.

In a modification, the projection or projections on the casing are formed with an intermediate portion of a smaller width, resulting for example in a dovetail or T-shape, in such a manner, that the latching means can be mounted on the support member, by inserting the projection or projections into an undercut recess or recesses, until the projection or projections reach the bottom thereof, which recess or recesses extend in parallel with the plane of the support member from the edge surface thereof and the or each recess has the shape of a dovetail or T-groove. The latching means subsequent to the insertion of the projection or projections into the recess or recesses is retained by the undercut edges of the recess or recesses and prevented from turning, in that the projection or projections are designed to prevent turning in relation to the recess or recesses.

According to a further modification, a projection on the casing of the latching means is given a narrower intermediate portion with a cross-section of, for example, rectangular shape, the projection being co-operable with an opening provided in a thin plate which, for example, is parallel with the door and mounted thereon, which opening is round and has a greater diameter than the intermediate portion of the projection, said opening being provided with a slot which faces away from the door edge, and is symmetrical in relation to the said opening, said slot having a width smaller than the diameter of the opening and smaller than the cross-section of the end portion of said projection and, greater than a narrow side of the intermediate

portion of the projection. The opening, being shaped substantially like a key-hole, so that the narrow side of the intermediate portion of the projection can be inserted into and moved along the slot into the opening, whereby on rotation of the casing with respect to the plate, to bring a longer side of said intermediate portion into a position in which it extends transversely to the slot, the latching means will be retained by the plate.

Still another modification includes a latching means which is given a shape adapted for mounting in a recess in the supporting part, this latching means advantageously having a rectangular cross-section.

In Figure 5 a latching means is shown which is difficult to be released by children. This latching means comprises a U-shaped handle 20 on the outer surface of the door 1, which handle is provided at 21 with a flexure point with the door and at 22 with another flexure point with the outer end of a connecting member 23 which at its inner end is engageable with the latching tongue 6, in that the inner end of said tongue drops into a groove 24 in a detachable end portion of the connecting member 23. The flexure points 21 and 22 permit limited bending movement of the handle 20 relative to the door 1. The connecting member 23 has a circular cross-section and is guided in the nipple 26 which is secured in a projection 25 on the inner end of the casing by screwing the nipple into a hole in the door 1 in such a manner, that the inner end of the coupling member can move only in the direction to and from the inner surface of the door 1. The said latching means operates as follows: when the door is to be closed, this is effected by pressing against the door to the side of the handle 20. Subsequent to the closing of the door, the handle assumes the position shown in Figure 5, and the latching tongue 6 has the position indicated by 6a, whereby the door is kept latched as described above. When the door is to be opened, the upper portion of the handle 20 is pressed against the door whereby the coupling member 23 via the groove 24 presses the latching tongue 6 to the position indicated by 6b, whereafter the door can be opened by pulling on the door with the lower portion of the handle 20 whilst the upper portion of the handle 20 is being pressed against the door. The described combination of movements is paradoxical to some extent and for a child difficult to perform. The effect can be increased by constructing the latching means such, that a relatively great force is required for pressing the handle 20 in against the door. This can be achieved, for example, by giving the latching tongue 6 a great resilient force and/or by mounting an additional spring in the latching means, for example a compression helical spring about the coupling mem-

ber 23 mounted between the door 1 and the handle 20. The closing of the door can, of course, be effected in a reverse manner to the above opening of the door, instead of in the way described before.

In the embodiment shown in Figure 5 the handle 20 is of plastics, the flexure points 21 and 22 being effected by reducing the cross-sectional area of said handle.

WHAT WE CLAIM IS:—

1. A latching means, for a door, drawer or like openable member, comprising a casing mountable on a face of the member and a resilient latching tongue extending substantially parallel with said face of the member, when the latter is open, said latching tongue being mounted at one end in the casing and having its other outer end portion extending out of the casing and movable in a direction toward and away from said face of the member, the latching means also comprising at a distance from said outer end portion of the latching tongue a stop for limiting said movement of the latching tongue, latching being effected by sliding engagement between the outer end of the latching tongue and a surface on a stationary structure with which the member co-operates, whereby when said member is closed with respect to said stationary structure, the latching tongue is bent resiliently, said latching action being effective by the tension in the latching tongue and said outer end of the latching tongue being retained in a catch-like manner in contact with the surface by friction or by small projections or recesses provided on the surface.

2. Latching means according to Claim 1 in which said inner end of the latching tongue is clamped in the casing.

3. Latching means according to Claim 1 in which said latching tongue is integral at its inner end with the casing.

4. Latching means according to any one of the preceding claims including fastening means comprising fastening tongues to be pressed into holes pre-formed in an edge surface of the member, said fastening tongues together with the casing are of substantially U-shape.

5. Latching means according to any one of Claims 1—3 in which the casing is provided with a projection for fixing it to the member, the said projection having an intermediate portion narrower than its end portions in such a manner, that the latching means can be secured on the member by inserting the projection into an undercut recess in said member extending parallel with the plane of said face of the member from the edge surface thereof adjacent said stationary

structure, whereby the latching means subsequent to the insertion of the projection into the recess is retained by the undercut edges of the recess and prevented from turning relative to the recess.

6. Latching means according to any one of Claims 1—3 in which the casing has a shape adapted for mounting in a recess in the member.

7. Latching means according to Claim 6 in which the casing has a rectangular cross-section.

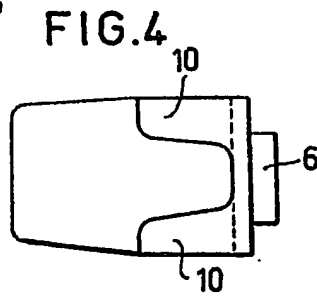
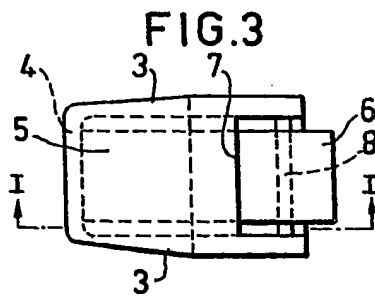
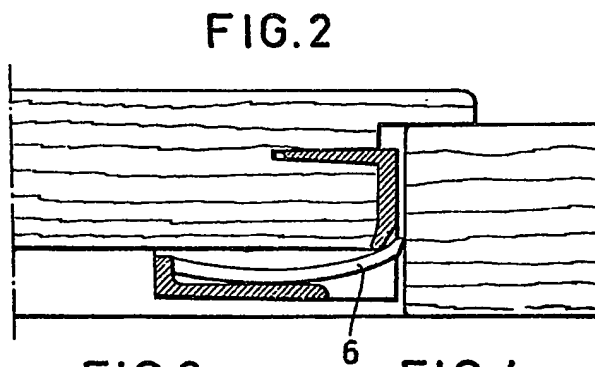
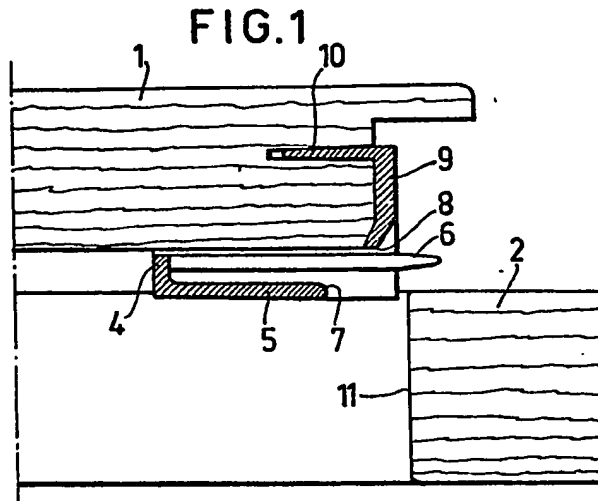
8. A latching means according to any one of Claims 1—3 in which the casing is provided with a projection having a narrower intermediate portion of rectangular cross-section in shape, the projection being co-operable with an opening provided in a thin plate parallel with the member and mounted thereon, which opening is round and has a greater diameter than the intermediate portion of the projection, said opening being provided with a slot which faces away from the edge of the member and is symmetrical in relation to said opening, said slot having a width smaller than the diameter of said opening and smaller than the cross-section of the end portion of said projection and greater than a narrow side of the rectangular intermediate portion of the projection, said opening being shaped substantially like a key-hole, so that the narrow side of the intermediate portion of said projection can be inserted into and moved along the slot into the opening, whereby on rotation of the casing with respect to said plate to bring a longer side of said intermediate portion into a position in which it extends transversely to the slot, said latching means will be retained by the plate.

9. Latching means according to any of Claims 1—8 comprising a U-shaped handle mounted on the outer surface of the member, which handle at one end is connected to the member and at its other end is connected to the outer end of connecting means extending through a hole through the member, the inner end of said connecting means engaging the latching tongue, whereby the connecting means is guided in such a manner that its inner end can move only in the direction toward and away from the casing, whereby the member can be opened only when the end of the handle which is connected with the connecting means is pressed against the member, thereby to cause the latching tongue to tilt over from one position to another position.

10. Latching means constructed and arranged substantially as described herein and shown in Figures 1—4 or Figure 5 of the accompanying drawings.

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